

2/13/92

**CONFIDENTIAL**

**EXPANDED  
SITE INSPECTION WORK PLAN**

**FOR:**

**DEPUE / New Jersey Zinc**

**PREPARED BY**

**PRE-REMEDIAL UNIT  
DIVISION OF LAND POLLUTION CONTROL  
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
2200 CHURCHILL ROAD  
SPRINGFIELD, ILLINOIS 62794**

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*Alan Altun*  
*Sampling*  
*3/6/92*  
*100.00*

EPA Region 5 Records Ctr.



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**SITE ASSESSMENT  
SECTION**

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I. SITE INFORMATION

I. GENERAL

*DePue/*

Site Name: New Jersey Zinc/Mobil Chem Corp

ILD# 062340641

Site Location: The site, at Marquette and

LPC# 0110305002

Depot Streets, is centrally located

Work plan prepared by:

within the city of DePue, Illinois.

B. Ford & A. Kirwan

Estimated inspection date: March 1992

Work plan approved by:

*Alan Altman*

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II. THE ASSIGNMENT (briefly describe the objectives of the inspection and how they are going to be accomplished).

The primary purpose of the CERCLA Expanded Site Inspection is to gather any additional field data, and to collect all field samples, that may be required to develop a CERCLA Hazard Ranking System scoring package for this site.

This task will be accomplished by collecting residential soil samples designed to document the migration of site contaminants into surrounding neighborhoods, and by collecting sediment and surface water samples designed to document migration of site contaminants into nearby wetlands and surface water.

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III. SITE DESCRIPTION (briefly describe the site, including location, unique geological features, source(s) of contamination, methods of disposal and current status of activities).

New Jersey Zinc is a 90 acre site centrally located in DePue, Il. It is situated on a floodplain of the Illinois river and has residential

areas to the west and east. The site is abutted against the river bluff on its north side and Lake DePue is to the south of the site.

During the time the smelter was still operating, off-site soil contamination likely occurred as a result of deposition of air emissions of zinc and possibly other metals.

A major source of contamination at the site is a waste pile accumulation of cinders from smelting furnaces that is approximately forty-feet high and covers an area of twelve acres. This waste pile is located along the south side of the New Jersey Zinc property. Another major source of contamination at the site is a series of five ridges of waste resulting from lithopone production. The ridges of lithopone waste are located north of the cinder waste pile. Runoff and leachate from the two waste sources has allegedly contaminated groundwater and surface water/sediments via a drainage ditch leading to Lake DePue. The smelter has not operated since August of 1989.

A large waste gypsum pile exists north of the manufacturing area. This gypsum waste was created as a result of Diammonium Phosphate fertilizer production that started at the site in 1965. Seepage from this waste pile into a small stream has resulted in water quality standards violations in that stream. The Diammonium Phosphate fertilizer facility is no longer operating and Mobil Chemical Corporation is in the process of dismantling the facility.

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IV. SITE HISTORY (briefly describe the history of the site including previous owners, reported injuries, complaints, govt. action).

New Jersey Zinc operated as a primary smelting operation from 1906 to 1971. As a primary smelter it processed primarily the zinc ore sphalerite for such uses as; galvanizing, die casting, paint pigment, brass alloys, zinc sheet, strip, and slab, and zinc castings. In 1971 it was converted to a secondary smelter. As a secondary smelter it recovered zinc, as zinc dust, from scrap metal. Some of the sources of the scrap metal included scrap dealers, slag and waste from galvanizers and waste diecast metal. The facility ceased smelting operations in August of 1989. From the early 1900's through the mid 1900's New Jersey Zinc also operated a barium facility at the site. The barium facility enabled production of lithopone. Lithopone is a white pigment consisting of barium sulfate and zinc sulfide.

Historically, air emissions from the smelting process released quantities of zinc and possibly other heavy metals. These air emissions occurred as a result of routine operations and also as a result of equipment malfunctions. Deposition of air releases onto surrounding property would likely result in elevated concentrations of zinc and possibly other metals in surrounding soils.

New Jersey Zinc processing and manufacturing activities generated residues from zinc smelting and lithopone production. These waste materials from the smelting and lithopone processing were placed on a field at the plant site. The zinc smelting wastes were deposited in one

pile at the southeast portion of the property. North of this pile, lithopone wastes were placed in five ridges. At one time, an open ditch flowed between the smelting waste pile and the lithopone waste. Runoff from these wastes drained into the ditch, which then flowed in a generally southerly direction into a storm drain for Marquette street. The storm drain empties into a ditch that flows into Lake DePue, a backwater lake of the Illinois River. Since 1975 the IEPA Division of Water Pollution Control has investigated the problems associated with runoff and leachate from the smelting and lithopone waste that enters Lake DePue. In 1976 the IEPA and New Jersey Zinc entered into a voluntary compliance agreement whereby New Jersey Zinc was to develop an acceptable compliance program. In 1977 New Jersey Zinc proposed plans for compliance that included covering the waste pile with a foot of clay. later in 1977 they proposed using sludge from the Chicago Metropolitan Sanitary District to cover the waste pile. Both proposals were found unacceptable by the IEPA. In 1981 New Jersey Zinc and Gulf & Western Industries agreed, under a consent order, to place a soil cover over and re-seed the waste piles and to construct a storm water conveyance system that would reduce rainwater contact with the waste piles. Also, approximately 90 acres of the site has had smelting waste applied to it as fill material. This smelting waste fill material is about 0 - 5 feet below grade.

In 1965 New Jersey Zinc constructed a Diammonium Phosphate fertilizer facility at the site as a method of utilizing the sulphur dioxide emissions from its zinc smelting operations. In September of 1975 the

Mobil Chemical Corporation purchased the Diammonium Phosphate (DAP) facility. As part of the DAP fertilizer production process, sulfuric acid is produced. Several sulfuric acid spills occurred in the mid-1970's. A sulfuric acid discharge into Lake DePue in 1974 resulted in a major fish kill. In May of 1980 a spill of sulfuric acid that entered the sewer system combined with zinc dust already present in the sewer system. The reaction released hydrogen sulfide gas which seeped into homes. One person died and two were injured as a result of the toxicity of hydrogen sulfide gas, which is a respiratory toxin.

A waste by-product of the DAP production process is calcium sulfate (gypsum). A large gypsum disposal area exists north of the manufacturing plant. Seepage from the gypsum disposal area enters a unnamed tributary of Negro Creek via groundwater. Water quality standard violations for ammonia, nitrogen, fluoride and total dissolved solids have occurred in this tributary of Negro Creek. Negro Creek empties into the Illinois River.

Two settling lagoons are located at the southern edge of the property near the perimeter of Lake DePue. When the DAP fertilizer facility was operating, these two lagoons recieved; cooling water drawn from the Illinois river, sand filter backwash, boiler blowdown, water softener wastewater, and storm water runoff. At present it recieves storm water runoff. Mobil Chemical Corporation no longer operates the DAP fertilizer facility and is in the process of dismantling the facility.

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## II. SAFETY CONSIDERATIONS

I. PHYSICAL HAZARDS AT SITE (briefly describe any physical hazards that the inspection team may encounter at the site).

Part of the site has a hilly terrain with relatively thick underbrush. The site building structures are in various stages of dismantling or demolition.

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II. CHEMICAL HAZARDS AT SITE (briefly identify those chemicals that are known or are suspected to be present, include their state and physical characteristics).

A smelting waste pile that contains high concentrations of zinc, cadmium, arsenic, copper and lead covers about twelve acres on the site. Five ridge piles of lithopone waste piles also exists at the site. Leachate from these two sources enters a drainage ditch that empties into Lake Depue. Prior to 1950, New Jersey Zinc also operated a barium plant at the site. Dust contaminated with barium may have settled on the site and surrounding properties. A drum burial disposal area at the east side of the property contains approximately one hundred drums of used vanadium pentoxide catalyst waste.

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III. PERSONAL PROTECTION (identify the level of personal protection that will be used, including anticipated modifications).

Level D protection will be used at all times, with continuous air monitoring during the sample collection. If an increase occurs, the following will be implemented:

>5 units over background level C

5 - 500 units over background level B

500 - 5000 units over background level A

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IV. EMERGENCY INFORMATION

Nearest Hospital: St. Margaret Hospital (phone)

Hospital Location: First Street in Spring Valley, Spring Valley is approximately five miles to the east of the site

Ambulance Service: St. Margaret Hospital (phone)

Fire Service: DePue Fire Department (phone) 911

Police: DePue Police Department (phone) 911

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### III. FIELD ACTIVITIES

#### I. TEAM ASSIGNMENTS

<u>NAME</u>	<u>Responsibility</u>
Bruce Ford	Project Manager/Safety Officer
Alan Kirwan	Project Manager/Safety Officer
Ken Corkill	Sampler
Bob Casper	Sampler

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#### II. FIELD WORK PROPOSED

(check all that apply)

<u>Activity</u>	<u>Procedures</u>
Ambient Air Sampling (OVA,HNU,etc.)	IEPA Methods Manual pp.19-23
Groundwater Sampling	IEPA Methods Manual pp.1-5
X Surface Water Sampling	IEPA Methods Manual pp.6-10
X Soil/Sediment Sampling	IEPA Methods Manual pp.13-18
Tap Water Sampling	IEPA Methods Manual pp.11-12
Slope Determinations	IEPA Methods Manual pp.24-25
Water Level Measurements	IEPA Methods Manual p.31
X Perimeter Survey	IEPA Methods Manual p.33
X Site Inspection	IEPA Methods Manual pp.34-39
Soil Borings/Well Installation	IEPA Methods Manual pp.26-30
X Public Interviews	IEPA Methods Manual p.40
Groundwater Flow Determination	IEPA Methods Manual p.32
X Decontamination Procedures	IEPA Methods Manual pp.41-56

#### IV. SAMPLING

- I. PROCEDURES (briefly describe the procedures the inspection team will employ in their collection of environmental samples).

All samples will be collected in accordance with the Illinois EPA's Site Inspection QAPP. Soil/sediment and waste samples will be collected with a stainless steel spoon/trowel and placed directly into sample jars. Water samples will be collected directly from the surface water body.

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- II. LOCATION OF SAMPLES (Identification of the number of samples, type, and justification. The attached maps identify the sample locations.)

<u>Sample #</u>	<u>Type</u>	<u>Justification</u>
<u>X101 &amp; X102</u>	<u>Soil</u>	<u>Background soils</u>
<u>X103</u>	<u>Soil/sediment</u>	<u>Background lake sediment</u>
<u>X104 - X106</u>	<u>Soil/sediment</u>	<u>Target definition (wetland)</u>
<u>X107 - X125</u>	<u>Soil</u>	<u>Target definition (soil exp.)</u>
<u>X201 - X211</u>	<u>Soils &amp; sediments</u>	<u>Source delineation</u>
<u>S301</u>	<u>Surface water</u>	<u>Background lake water</u>
<u>S302</u>	<u>Surface water</u>	<u>Source delineation</u>
<u>S303 &amp; S304</u>	<u>Surface water</u>	<u>Target definition</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

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III. ANALYTICAL SERVICES (identify the laboratory that will perform the analysis of the samples taken at the site, include requested analysis)

The inorganic portion of the target compound list will be analyzed for on all samples. Three on site waste/soil samples, one on site surface water sample, three off site surface water samples and one off site sediment sample will be analyzed for the complete target compound list. The inorganic parameters will be analyzed by the IEPA's Champaign laboratory and the organic parameters will be analyzed by the IEPA's Springfield laboratory.

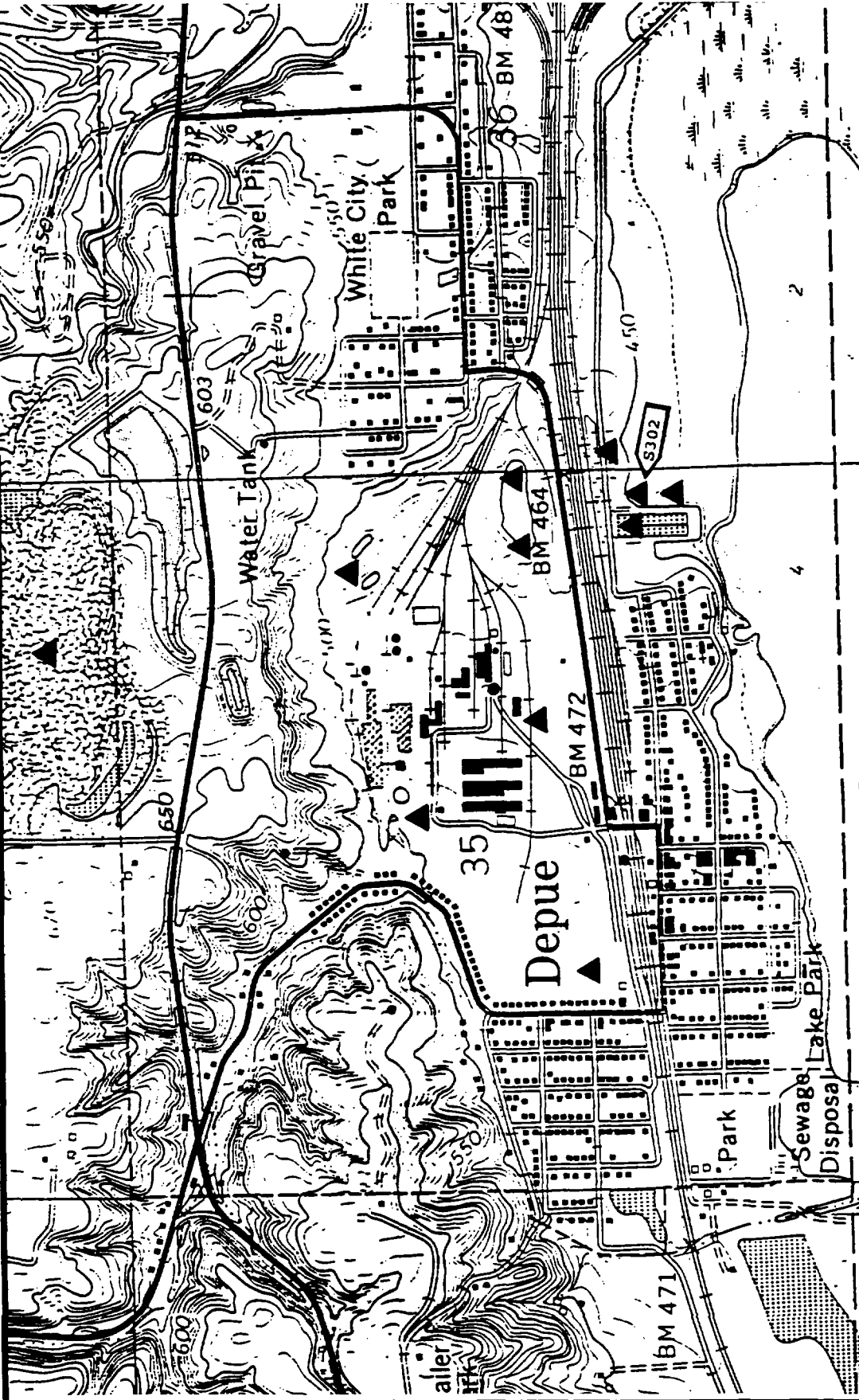
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ATTACHMENT I

RECORDS AND DOCUMENTATION (Check the records or documents that will be generated during this project)

- X     Work Plan
- X     Safety Plan
- X     Sampling Plan
- X     Equipment Checklist
- X     Log Book
- X     Chain of Custody Records
- X     Sample Analysis Records
- X     Photographs
- Drilling Logs
- Correspondence
- Personal Interview Tapes or Transcripts
- X     Maps
- Instrument Calibration Records
- Procurement Documents
- Site Inspection Form (2050)
- X     HRS Scoring Package
- Other (specify)

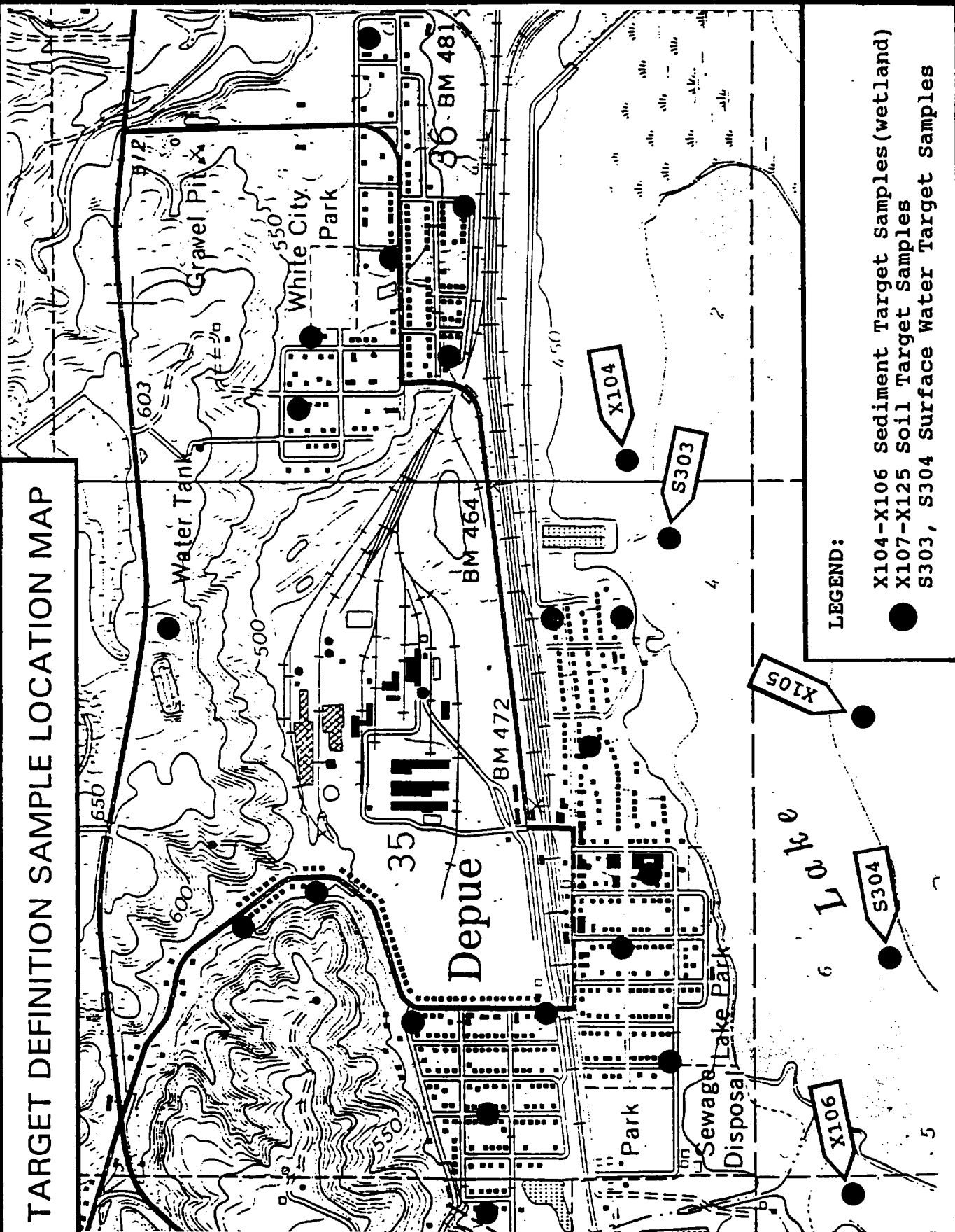
# SOURCE DELINEATION SAMPLE LOCATION MAP



## LEGEND:

- ▲ X201-X211 Waste/Soil Source Samples
- △ S302 Surface Water Source Sample

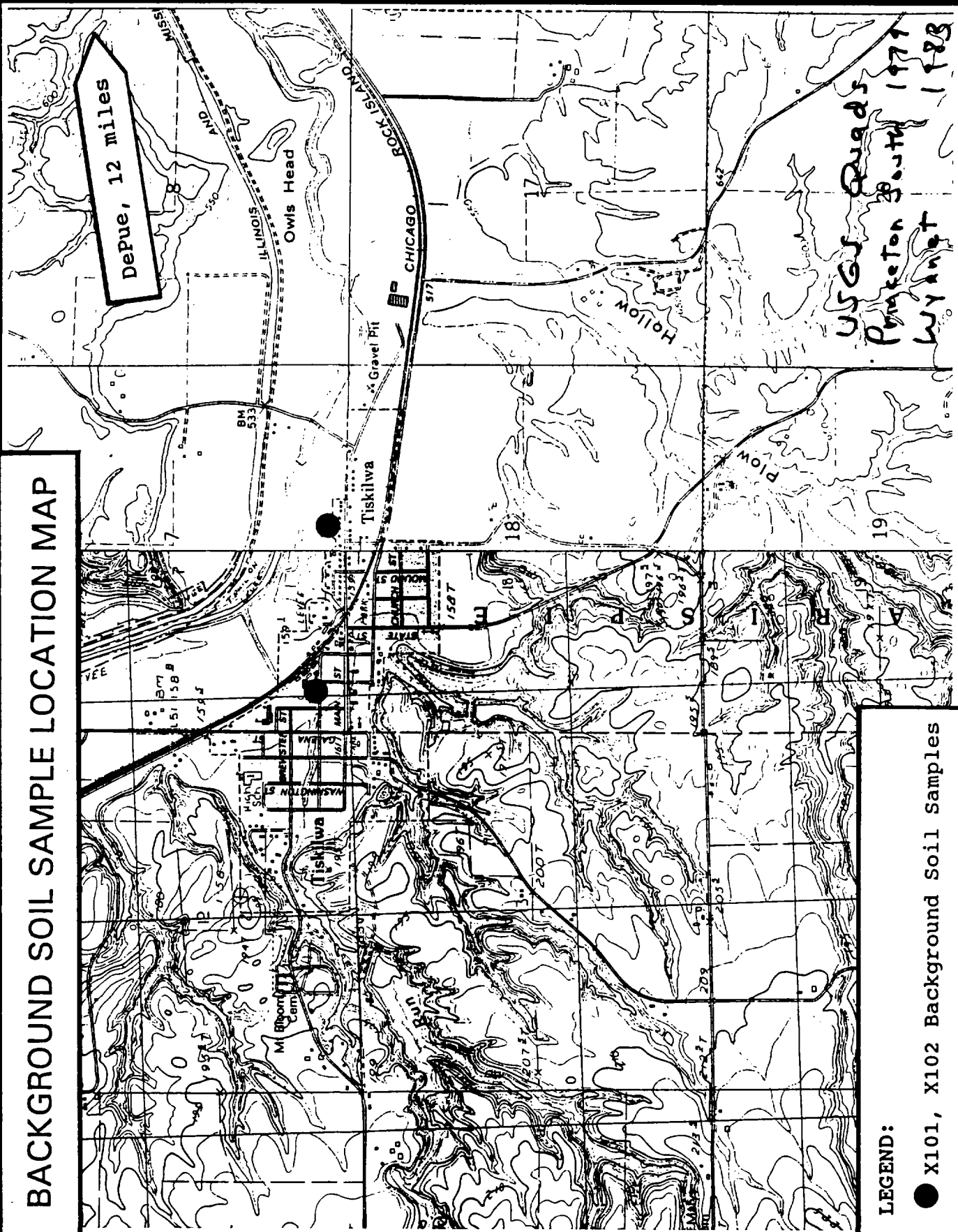
# TARGET DEFINITION SAMPLE LOCATION MAP



## LEGEND:

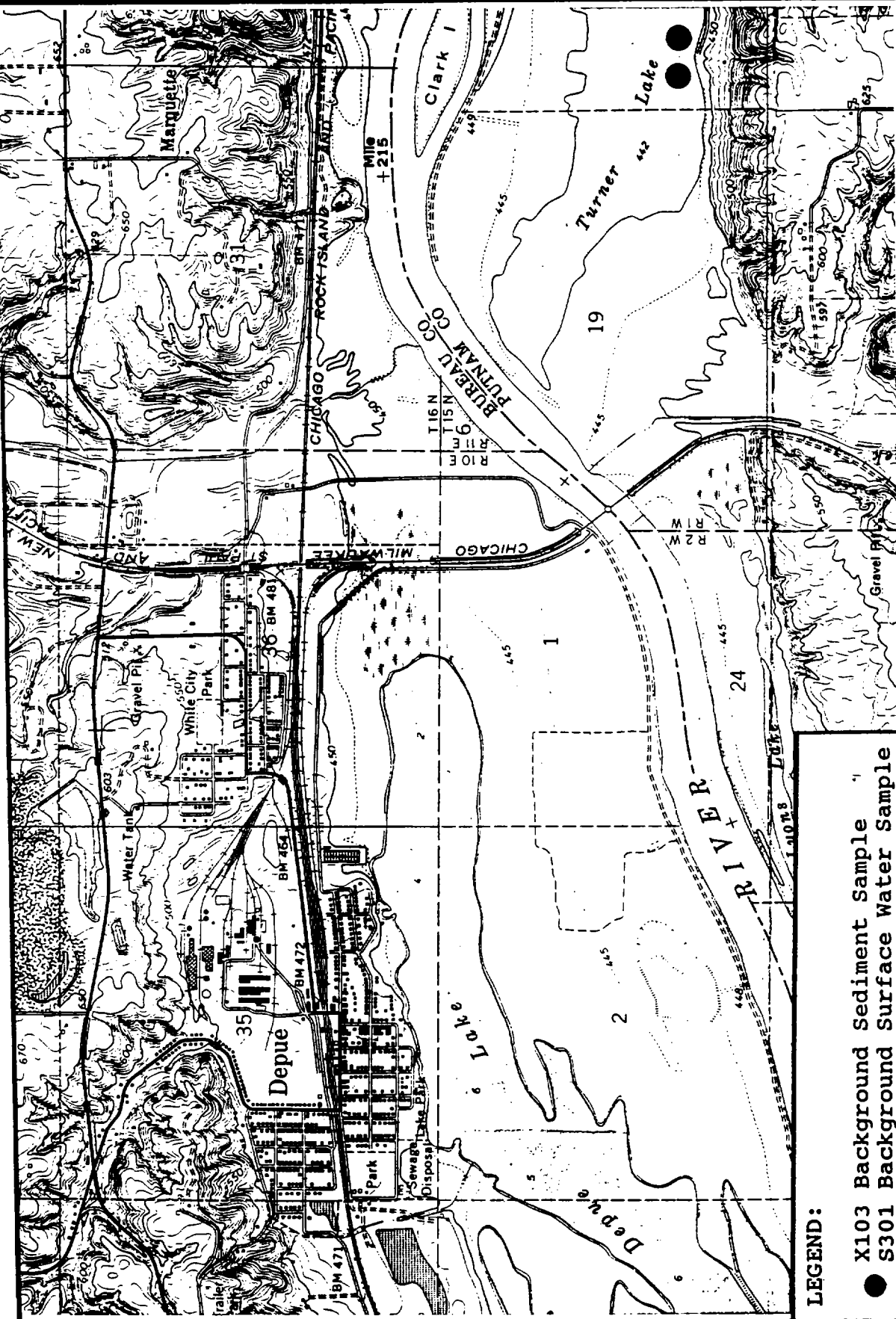
- X104-X106 Sediment Target Samples (wetland)
- X107-X125 Soil Target Samples
- S303, S304 Surface Water Target Samples

# BACKGROUND SOIL SAMPLE LOCATION MAP



# BACKGROUND SEDIMENT/SURFACE WATER SAMPLE

## LOCATION MAP



## LEGEND:

- X103 Background Sediment Sample
- S301 Background Surface Water Sample